

According to a new market research report titled, '[EV Battery Management Market](https://www.meticulousresearch.com/download-sample-report/cp_id=5337) by Vehicle Type (Electric Cars, LCV, HCV, E-scooters & Motorcycles, and E-bikes), Configuration, Design, Topology, Voltage, Cell Balancing Method, and Geography - Global Forecast to 2029,' the global EV battery management systems market is projected to reach \$37.3 billion by 2029, at a CAGR of 30.5% from 2022 to 2029.

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The growth of this market is attributed to the increasing adoption of electric vehicles, the increasing safety concerns related to EV batteries, the increasing demand for fast charging batteries for e-mobility, and the increasing requirement for higher efficiency and performance of battery packs. Furthermore, the increasing R&D investments for developing high energy density EV batteries and new cell chemistries for EV batteries offer potential growth opportunities for the players operating in this market.

The lack of standardized regulations for developing battery management systems and the high cost of battery management systems are expected to restrain the growth of this market. Furthermore, the complex architecture of battery management systems and their limited data logging capacity are challenges for this market.

### **The Impact of COVID-19 on the Global Electric Vehicle Battery Management Systems Market**

The outbreak of the COVID-19 pandemic led to strict lockdowns announced by governments of various countries to contain the spread of the virus. Global car sales dropped to unprecedented levels, with a year-on-year drop of 15%.

However, global electric car sales remain more resilient than the general automotive sector. The International Energy Agency (IEA) reported a 40% increase in global electric car sales in 2020 from the 2.1 million electric cars sold in 2019. Large markets such as France, Italy, Germany, and the United Kingdom reported the sales of electric car sales almost every month throughout 2020, implying increased sales than in 2019.

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Furthermore, in China, electric car sales grew by 12% year-on-year. In 2020, electric car sales reached about 1.3 million in Europe and China, a total sales of about 10% in Europe and 5% in China. In the United States, despite

a lack of EV stimulus measures at the federal level, electric car sales were 4% higher in 2020 than in 2019, in a car market that shrank by 15%.

The growth in global EV sales, despite the lockdown, was attributed to the strong policy support in Europe, as 2020 was an important target year for emissions standards. Purchase incentives increased in many European countries, especially in Germany. Additionally, the decline in battery cost per kWh enabled EV OEMs to offer better products in both model choice and performance. Moreover, fleet operators such as Walmart, Amazon, and United Parcel Services initiated their fleet transition to EVs, supporting the growth of the EV market.

The additional COVID-19 stimulus packages implemented in the summer of 2020 by several governments worldwide provided an additional boost. The key growth factor was the financial incentives to support the purchase of electric vehicles. Additionally, the high growth in EV sales in these markets also supported the growth of the electric vehicle battery management systems market.

A battery management system is a critical component of an EV that monitors the charge state of a battery and performs various functions such as cell balancing, overcharge protection, preventing thermal runaway, and maximizing battery efficiency. These systems ensure the safety and reliability of lithium-ion batteries used in electric vehicles, which are otherwise highly unstable for mobility applications.

The global EV battery management systems market is segmented by vehicle type, configuration, design, topology, voltage, cell balancing method, and geography. The study also evaluates industry competitors and analyzes the market at regional and country levels.

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Based on vehicle type, the global EV battery management systems market is segmented into electric cars, light commercial vehicles, heavy commercial vehicles, electric scooters & motorcycles, and e-bikes. In 2022, the electric cars segment is expected to account for the largest share of the global electric vehicle battery management systems market. The large market share of this segment is attributed to the increasing adoption of electric cars in developing countries, including India, proactive participation by established automotive OEMs in producing electric cars, and the increasing number of new manufacturers in the electric passenger cars segment. However, the light commercial vehicles segment is projected to register the highest CAGR during the forecast period. The rapid growth of this segment is attributed to the growing awareness regarding the role of electric vehicles in reducing emissions, the increase

in demand for electric vehicles to reduce fleet emissions, and stringent government rules and regulations towards vehicle emissions.

Based on configuration, the global EV battery management systems market is segmented into up to 36 cells, 48 cells to 84 cells, 96 cells to 132 cells, 144 cells to 180 cells, and more than 180 cells. In 2022, the 96 to 132 cells segment is expected to account for the largest share of the global electric vehicle battery management systems market. The large market share of this segment is attributed to the optimum weight to the power capacity of the battery pack, the increasing use of 96 cells to 132 cells in electric passenger cars, and the increasing lightweight battery packs with a high energy density trend. However, the 144 cells to 180 cells segment is projected to register the highest CAGR during the forecast period.

Based on design, the global EV battery management systems market is segmented into protection circuit model and battery management systems. In 2022, the battery management systems segment is expected to account for the largest share of the global electric vehicle battery management systems market. The large market share of this segment is attributed to the ability of the battery management systems to monitor the voltage and current in a battery pack, its cell balancing capabilities, and the ability to protect against overcharge and deep discharge.

Based on topology, the global EV battery management systems market is segmented into centralized BMS, de-centralized BMS, and modular BMS. In 2022, the modular BMS segment is expected to account for the largest share of the global electric vehicle battery management systems market. It is the most preferred topology by battery manufacturers, offers significant computational power, and is safe as it does not require extensive wire harnesses. These factors are driving the growth of this segment.

Based on voltage, the global EV battery management systems market is segmented into low voltage BMS and high voltage BMS. In 2022, the high voltage BMS segment is expected to account for the largest share of the global electric vehicle battery management systems market. The large market share of this segment is attributed to the high adoption of electric passenger cars and buses worldwide.

Based on cell balancing method, the global EV battery management systems market is segmented into active cell balancing and passive cell balancing. In 2022, the passive cell balancing segment is expected to account for the largest share of the global electric vehicle battery management systems market. The large market share of this segment is attributed to its simple architecture and low cost. Passive cell balancing uses readily available ICs, which effectively monitor multiple cells and save development time and cost.

Based on geography, the global EV battery management systems market is segmented into five major regions: North America, Europe, Asia-Pacific, Latin America, and the Middle East & Africa. In 2022, Asia-Pacific is expected to account for the largest share of the global electric vehicle battery management systems market. The large share of this regional market is attributed to the increasing adoption of electric vehicles in this region, the growing number of start-ups offering numerous battery solutions, the leadership of China in global EV battery manufacturing capacities, a higher concentration of global EV battery OEMs in the region, and the increasing investment by leading battery OMEs for setting up battery manufacturing capacities in emerging economies of the region such as Thailand, Indonesia, and India.

Some of the key players operating in the global EV battery management systems market are Leclanché SA (Switzerland), Sensata Technologies Holding PLC (U.S.), Nuvation Energy (U.S.), Renesas Electronics Corporation (Japan), Eberspaecher Vecture Inc. (Canada), ST Microelectronics N.V. (Switzerland), Panasonic Corporation (Japan), LION Smart GmbH (Germany), Ewert Energy Systems, Inc. (U.S.), Navitas Systems LLC. (U.S.), NXP Semiconductors N.V. (Netherlands), Analog Devices, Inc. (U.S.), Merlin Equipment Ltd. (UK), BMS PowerSafe (France), and Maxim Integrated (U.S.).

## **Scope of the Report**

### **EV Battery Management Market, by Vehicle Type**

- Electric Cars
  - Battery Electric Vehicles
  - Plug-in Hybrid Electric Vehicles
  - Hybrid Electric Vehicles
- Light Commercial Vehicles
- Heavy Commercial Vehicles
- E-scooters & Motorcycles
- E-bikes

### **EV Battery Management Market, by Configuration**

- Up to 36 Cells
- 48 Cells to 84 Cells
- 96 Cells to 108 Cells
- 144 Cells to 180 Cells

- More Than 180 Cells

### **EV Battery Management Market, by Design**

- Protection Circuit Model
- Battery Management Systems

### **EV Battery Management Market, by Topology**

- Centralized BMS
- De-centralized BMS
- Modular BMS

### **EV Battery Management Market, by Voltage**

- Low Voltage BMS
- High Voltage BMS

### **EV Battery Management Market, by Cell Balancing Method**

- Active Cell Balancing
- Passive Cell Balancing

### **EV Battery Management Market, by Geography**

- Asia-Pacific
  - China
  - India
  - Japan
  - South Korea
  - Thailand
  - Indonesia
  - Rest of APAC
- Europe
  - U.K.
  - Germany
  - France
  - Italy

- Spain
  - Poland
  - Hungary
  - Norway
  - Sweden
  - Denmark
  - Rest of Europe
- North America
  - U.S.
  - Canada
- Latin America
- Middle East & Africa

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